CITY OF DANBURY

GENERAL GUIDE

PLANNING COMMISSION/DEPARTMENT REVIEWS

BY ENGINEERING DEPARTMENT

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BY ENGINEERING DEPARTMENT OF CITY OF DANBURY

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This listing is meant to be used as a guide only. It is not all inclusive. All plans are to be designed following good and accepted engineering principles and practices. Additional comments or requirements may be made depending on the particular proposal being reviewed. Each item on this list may not apply to every plan submitted.

A. SANITARY SEWER

1. The engineer/designer is to make himself/herself knowledgeable as to the standards, codes, etc. of the City of Danbury.

2. Usage calculations are to be based on City criteria:
   a. 100 gallons per capita per day (GPCD) or 90 GPCD with water saving devices
   b.

Number of Bedrooms	Number of Persons
1	1.5
2	2.25
3	3.25

3. Connections are to be generally perpendicular to the building being served.

4. Generally, connections directly to manholes are not permitted.

5. Services are to meet the requirements of the plumbing code.

6. If the Public Works Department determines that an extension of a sanitary sewer main is warranted:
   a. Common Council approval is required. See Appendix A for the listing of typical conditions and restrictions attached to Common Council approvals of petitions.
   b. State of Connecticut Department of Environmental Protection (DEP) approval of plans is required for large sized mains (21" and larger) and for pumping stations. Submittal of plans to DEP must be made by the City after the Engineering and Public Utilities Departments have approved the plans and under cover of a City letter of approval.
   c. The extension is to be compatible with the current comprehensive sewer study of the City.
   d. The size of the sanitary sewer main is to be based on full development of the sewershed (saturated per zoning) - minimum 8" pipe is required.
   e. Sewer main extensions are to be designed by a State of Connecticut licensed professional engineer.
   f. Materials and methods of construction are to be to City standards.
   g. All costs involved with the design, construction, record mapping, transfer of title/easements etc., of the sanitary sewer extension are to be borne by the party extending the sanitary sewer.
   h. The City is to be provided adequate access to all future City manholes. In most cases this will mean that manholes are to be in pavement areas.
   3. The contractor is to meet with a City inspector prior to the start of construction to review plans as well as City standards for materials (shop drawings) and

methods of construction. See Appendix B for City of Danbury standards for pipe, manholes, testing, etc.

7. Septic systems are to be abandoned as per City of Danbury Health Department requirements.

8. Existing sanitary sewer services which will not be used are to be abandoned in manners acceptable to the Public Utilities Department.

9. If it is proposed to use an existing service, the engineer or plumber is to verify the adequacy of the size and condition of the existing service for the proposed use.

10. A road opening permit for work within a City road right of way is to be acquired from the City Highway Department.

11. State of Connecticut Department of Transportation approval of work within a State road right of way will be required.

12. Title to pipe and appurtenances (the City will not own or be responsible for private sewer services/laterals) as well as any easements required for the portions of the sewer which will become the City's (the City will own to the manhole just beyond the point where at least two buildings are served) are to be granted as warranted. All legal documents are to be in forms acceptable to the City Corporation Counsel.

13. No private pumping stations serving more than one building are permitted.

14. For municipal pumping station design see Appendix C for the design checklist.

15. For some industrial and commercial uses, the Public Works Department may ask for information on the characteristics of the wastewater to be discharged. All wastes must comply with local ordinances and with State of Connecticut DEP requirements.

16. All sewage discharges must be consistent with the City's current NPDES permit. For information concerning the permit's discharge requirements as to quality and quantity of a discharge, contact the Public Utilities Department.

B. WATER

1. The engineer/designer is to make himself/herself knowledgeable as to the standards, codes, rules and regulations of the City of Danbury.

3. For most projects a "Needed Fire Flow" analysis based on the appropriate criteria (Insurance Services Office (ISO) for non-sprinklered buildings or NFPA for sprinklered buildings) is required.

3. The Public Utilities Department is to be contacted by the developer/engineer to acquire flow and pressure information for the City water system in the area of the project in order to verify that it is adequate to meet the "Needed Fire Flow" as calculated. This information is to be submitted to the Engineering Department.

4. Connections are to be generally perpendicular to the building being served.

5. A road opening permit from the City Highway Department will be required for any work within a City road right of way.

6. State of Connecticut Department of Transportation approval of any work proposed within a State road right of way will be required.

3. Only one domestic service connection and one domestic water meter per building will be permitted. Service connections shall be installed with a shutoff valve and a curb box.

8. A fire service to a building can be made either via a separate tap (the domestic connection also being a separate tap) on the City water main or by combining the domestic and fire service and making one tap on the water main.

   If separate services are to be run from the water main to the building served, the taps are to be made a minimum of two feet apart. The exact separation distance between taps will be determined in the field by the City's inspector based on actual conditions.

   If a single combined fire/domestic service tap is made, the fire service and the domestic service are to separate a minimum 5 feet outside the face of the building.

   Tapping sleeves are to be to City standards.

   All ductile iron fire lines (fire only or combined fire and domestic) are to be flushed, disinfected and sampled. Samples must pass water quality testing prior to the pressure test.

   The City of Danbury Building Department is responsible for the inspection of the fire line installation from the edge of the City road to the building.

9. Services are to meet the requirements of the plumbing code and the Water Department Rules and Regulations (see Appendix E).

10. If the Public Works Department determines that a water main extension is warranted:
    a. Common Council approval will be required. See Appendix A for the listing of typical conditions and restrictions attached to Common Council approvals of petitions.
    b. The extension is to be compatible with the current comprehensive water study for the City.
    c. The size of the water main is to be based on the full development needs of the service area and is to meet the peak flows expected - a minimum 8" pipe size will be required.
    d. Water mains shall have a minimum water pressure of 25 psi under normal operating conditions. Pressure reducing devices shall be provided in areas where static pressure will exceed 125 psi.
    e. Dead end water mains shall be avoided whenever possible. Where desd-end mains are installed, adequately sized blowoffs or flushing hydrants shall be installed.
    3. Materials and methods of construction are to be to City standards. Pipe, fittings, valves and fire hydrants shall, at a minimum, conform to the latest standards established by AWWA. See Appendix D for City standards for pipe, fire hydrants, valves, testing, etc.
    4. The materials shall not cause the water delivered to customers to become impure, unhealthful and nonpotable, after being placed into active service.

Paints, linings, coatings, adhesives, and lubricants in contact with potable water shall be ANSI certified. All materials shall be kept as clean as possible during construction.

5. Materials shall be capable of withstanding internal and external forces to which they may be subjected, while in service and shall be protected against internal and external corrosion.

i. All costs involved in the design, construction, record mapping, transfer of title and easements, etc. are to be borne by the party extending the water main.

j. Water mains and related facilities are to be designed by State of Connecticut licensed professional engineers.

k. A water main is to have 4.5 feet of cover to prevent freezing, unless approved otherwise by the Public Works Department.

l. Fire hydrants are to be installed in locations which provide a maximum spacing of 500 feet, at the ends of dead ended mains (for flushing purposes), at high points in the main and elsewhere, if required.

m. At high points in water mains where air can accumulate, if a fire hydrant is not installed, provisions are to be made to remove air by air-relief valves.

n. At the discretion of the Public Works Department, it may be determined that restrained joint pipe is to be installed in a roadway, where it is likely that other utilities exist or may be installed. Thrust blocks will generally be allowed “on site”. Thrust blocks or restrained joints are to be used at all tees, bends, caps, plugs, valves, and fire hydrants to prevent movement.

o. At the discretion of the Public Works Department, valves may be required to be installed on all three legs of a tee and/or elsewhere.

3. The maximum deflection allowed at a joint is 80% of the manufacturer’s recommended maximum joint deflection.

4. Water mains shall be laid at least 10 feet horizontally from any existing or proposed gravity sanitary sewer, when possible. Where 10 feet of separating distance cannot be physically achieved, the water main is to be located at least 18 inches above the sanitary sewer. No water pipe is to come in contact with any part of a sanitary sewer or storm manhole.

5. At sanitary sewer and storm sewer crossings, a minimum vertical clearance of 18 inches, measured from crown to invert, shall be maintained between the water main and the sewer. Water main joints are to be spaced as far as possible from the sewer crossing.

6. For bridge crossings, the water pipe shall be adequately supported, protected from damage and insulated from freezing.

t. The City is to be provided adequate access to the main and its appurtenances. In most cases the main will be required to be installed in pavement areas.

u. The contractor is to meet with a City inspector prior to the start of construction to review plans and City standards for materials (shop drawings) and methods of construction.

v. Reference is made to the Water Department Rules and Regulations in Appendix E for additional information.

11. No physical connection shall be made between the distribution system of a public water system and any customer with a private well, unless the well is physically disconnected. Wells are to be abandoned in manners acceptable to the City Health Department.

12. If an existing service is to be reused and Public Utilities Department approval has been obtained, the engineer or plumber is to verify that the size and condition of the service are adequate for the proposed use.

13. An existing service which is to be discontinued is to be abandoned in a manner acceptable to the Public Utilities Department.

3. Title to pipe and appurtenances (the City will not own or maintain private services), as well as easements for the portions of the system which will become the City's (the City will own to a convenient point beyond where at least two buildings are served), are to be granted to the City, where warranted. Legal documents are to be in forms acceptable to the Corporation Counsel's Office.

15. No private pumping station serving more than one building is permitted.

16. For municipal pumping station design see Appendix C for a design checklist.

17. Private fire hydrants are not allowed.

18. The City Fire Department should review the plans with respect to access and fire protection in general.

19. Plumbing for domestic irrigation systems is to occur on the residence side of the water meter. The type of domestic irrigation system to be installed is to be noted on the water connection application submitted to the City Permit Center.

C. STORM DRAINAGE

1. Pre-development and post-development runoff computations for the entire site based on a 25 year storm will be required.

2. Calculations for sizing the on and off site drainage systems (based on a 25 year storm) will be required.

3. Either the Rational, TR-55 or TR-20 (where applicable) method is acceptable.

4. Rights to drain from downstream property owner(s) will be required, if there is an increase in the rate of or volume of runoff discharged from the site, a change in the point of discharge of runoff from the site in question onto other property or if there is a decrease in runoff which has adverse affects downstream.

5. The developer's engineer is to verify that surface runoff from any City road will not have a negative impact on the site. If runoff from a City road will impact the site, a drainage plan to handle this runoff is to be developed by the engineer for installation by the developer.

6. Connections to existing systems:
    a. Calculations on the adequacy of the capacity of the existing downstream system will be required. If portions of the existing system are found to be inadequate, replacement of these portions of the existing system may be necessary.
    b. If connecting to a City system, the connection is to be made under the supervision of and to the satisfaction of the City's Highway Department.

7. Retention Systems/Detention Systems/Drywells where proposed:
    a. Calculations (based on a 25 year storm) for the sizing of the storage required for the proposed development and of the outlet control are required.

b. Percolation and deep hole tests are to be done and results submitted, if warranted.

c. The installation of the system is to be done under the supervision of the engineer.

d. After construction, the engineer is to submit to the City written certification that the system was installed as per the approved design.

e. A reminder to the property owner that the system will remain a private one and that regular maintenance will be crucial to its continued functioning as intended should be made.

f. Adequate access to the system for maintenance purposes is to be provided.

g. If the system is to be installed in a parking/driveway area, it is to be capable of handling minimum H-20 loads.

h. A DEP dam permit may be warranted for a detention or retention pond.

8. Floodplains and floodways are to be shown where denoted by the Federal Emergency Management Agency (FEMA). No filling in a floodway will be allowed.

9. Army Corps of Engineers approval is to be acquired, if warranted.

10. Discharges are to be properly stabilized.

11. Roof drains are to be shown on the plan.

12. If the development will discharge to a State of Connecticut storm drainage system, State Department of Transportation (DOT) approval will be required.

13. Extensions of systems in City roads:

a. Pipe is to be a minimum 15 inches in diameter.

b. Reinforced concrete pipe (RCP), asphalt coated corrugated metal pipe (ACCMP) , aluminized steel corrugated metal type 2 pipe, or ADS -N12 smooth wall polyethylene corrugated drain pipe meeting City specifications is to be used.

c. Curb inlet type catch basins are to be installed wherever possible.

d. DOT standards are generally followed by the City.

14. A road opening permit from the City Highway Department will be required for any work within a City road right of way.

15. State of Connecticut Department of Transportation approval will be required for any work within a State road right of way.

D. GRADING

1. Existing and proposed contours as well as an adequate number of spot elevations are to be provided. Contours at two foot intervals are recommended.

2. Construction and/or grading rights from adjacent property owners are to be acquired if warranted.

3. Retaining walls over three feet in height are to be designed by and constructed under the supervision of a State of Connecticut licensed professional engineer or architect. If an existing retaining wall on the site is to remain, the professional

engineer or architect is to analyze the wall to verify that it is in a condition suitable for the proposed use of the site.

4. No wood retaining walls over three feet in height will be permitted.

5. Adequate compaction of fill is to be provided.

6. Where ledge is to be left, the stability of the ledge is to be verified by a qualified State of Connecticut licensed professional engineer or soils scientist.

7. A grading permit from the City Health Department is to be acquired if warranted.

E. PARKING, DRIVEWAYS, SIDEWALKS

1. Parking for the handicapped is to be provided as warranted.

2. Driveway ramps are to be to City standards. See Appendix F.

3. Driveway widths at gutter lines are to be reasonable and acceptable to the City Highway Department.

4. A driveway is not to extend in front of adjacent property.

5. A sidewalk (5 feet in width and concrete) is to be installed across the front of the property at or near the property line. The sidewalk grade is to be carried across the driveway. Ramps for the handicapped are to be provided as per State of Connecticut regulations. See Appendix F.

6. If the driveway is connecting to a State of Connecticut roadway, a DOT permit is needed. The City will recommend to the State that on all State roads concrete driveway aprons, concrete curb and concrete sidewalks be required.

7. Verifications of adequacies of sight distances to be provided at driveways and/or intersections is to be provided.

8. Existing driveways no longer to be used are to be closed in manners acceptable to the City or State Highway Departments (whichever is appropriate).

9. Driveways which are less than 100 feet from an intersection of two or more roads are to be reviewed and approved by the Local Traffic Authority (Police Chief) and the Superintendent of Highways.

F. RECYCLING

1. The City of Danbury , in accordance with the Recycling Ordinance (Sec.16A-80 of the Code of Ordinances), requires recycling of the following:

newspaper
glass food containers
metal food containers
plastic food containers
cardboard
leaves
waste oil

storage batteries
office paper
scrap metal

2. If the structure is to hold a residency, it should be treated as a private residency, and the recycling should be an extension of the garbage contract for the residency. All mandated items must be recycled.

3. If the structure is to hold a daily or weekly school, a collection container for white office paper must be placed outside the building. It is suggested that a smaller container be placed within each classroom.

4. A collection container must be placed in the office for white office paper.

5. If the structure holds a kitchen to be used by groups or outside groups, those responsible must be notified of recycling regulations. It is suggested that they be required to remove all rubbish and recyclables with them from the premises.

6. Leaves must not be included in the solid waste stream.

G. ROADS

1. Roads are to meet the requirements of the Subdivision Regulations or the road ordinance, where applicable.

2. Any work affecting existing trees within a City road right of way or on City property is to be approved by the City Tree Supervisor.

H. TRAFFIC IMPACT STUDY

1. General

a. This is a guide meant to provide guidance to developers, traffic engineers and planners on contents of traffic impact studies submitted in conjunction with development applications to the City of Danbury.

b. This guide is in the form of a checklist for a generally accepted analysis procedure. It is not a comprehensive listing for every method or procedure that may be used in preparation of a traffic impact study. Also, it does not cover special types of development that may require different procedures for analysis. Professional judgment and creativity in performing traffic impact studies is, therefore, encouraged.

c. The overall objective of a traffic impact study is the identification of all existing and expected future traffic bottlenecks within the impact area and determination of all appropriate traffic improvement measures that need to be considered. Major consideration should be given to safeguarding public safety, welfare, convenience and other general interests.

d. It is expected that the use of this checklist will have substantial efficiency benefit in the preparation and review of studies. Furthermore, consistency among various studies will be maintained.

e. Information provided through the use of this document is meant to supplement information required by State or other City jurisdictional review agencies. It is encouraged that requirements of such agencies also be submitted.

f. The submitted traffic information and plans will be considered public information by the City of Danbury. The City is, therefore, free to use or share the information with other public or private agencies.

2. Checklist for Conducting Traffic Impact Study

a. Inventory of Existing and Proposed Land Use

i. Existing Land Use

Location of lot
Size of lot
Zoning of lot
Type of land use

ii. Proposed Land Use

Zoning
Type of land use
Potential buildable units or square footage

b. Inventory of Adjacent Land Use

i. Zoning
ii. Types of land use
iii. Approved and planned developments in area
iv. Developments recently completed and those under construction

c. Inventory of Existing Roadway and Traffic Conditions Within Area

i. Street network and classification
ii. Street width, right of way and number of lanes
iii. Geometrics and characteristics of streets including roadway alignment and intersection geometric features
iv. Types and locations of traffic control devices within the impact area
v. Operational features of traffic control devices
vi. Up to date 24 hour weekday directional traffic counts
vii. Up to date AM and PM peak period turning volume counts at intersections and other critical locations.
viii. Analysis of 3 year accident history by frequency, type, cause, number of injuries, etc. (Accident collision diagram should be provided.)
ix. Transit routes, headways and locations of stops or terminals within the area

d. Projection of Street Traffic Condition Within the Area (Without Traffic Improvement)

i. Determine traffic specific to planned, approved, under construction and just completed developments in area
ii. Combine background traffic with traffic specific to developments in area
iii. Project street traffic volumes (two and five years from present) using an annual growth factor of 5 percent or a growth factor based on historical traffic data for the area, whichever is higher

e. Projection of Site Traffic
   i. Estimate trip generation rate per unit or square footage
   ii. Calculate AM, PM, and all day traffic to be generated
   iii. Estimate trip distribution in percentage (assume the worst case scenario)
   iv. Assign trips to street network within the impact area

f. Analysis of Traffic Conditions
   i. Combine projected site and street traffic (two and five years from present)
   ii. Analyze and identify all expected traffic and roadway conditions (without traffic improvements)
   iii. Develop possible remedies to existing and expected traffic bottlenecks (conceptual design plans should be submitted)
   iv. Re-analyze traffic and roadway conditions (with traffic improvements)

g. Site Access Points
   i. Identify proposed driveway locations
   ii. Indicate roadways and other features including driveways, traffic control devices, on street parking, poles, trees, etc. existing within driveway sight distance requirements on both sides of the road
   iii. Indicate proposed driveway dimensions : grade, radii, width, separation distance, vehicle storage or queue length, height clearance, etc.
   iv. Indicate existing and proposed driveway sight distances and location and height of proposed features within sightline triangles
   v. Indicate proposed driveway control devices, channelization and pavement markings
   vi. Indicate proposed on-site parking spaces adjacent to driveway
   vii. Indicate proposed on-site circulation of vehicles insuring no backing maneuvers into and out of driveway
   viii. Indicate proposed location of street right of way, curbing, sidewalk, etc.
   ix. Provide LOS analysis for each access point (two and five years from present)